

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (*Currently Amended*) A deformable mirror having a displacement detecting function, comprising:

a flexible thin film having a reflecting surface and an upper electrode to be deformed by electrostatic attraction; and

a control electrode and a capacitance detecting electrode, located opposite to ~~said~~ the flexible thin film,

wherein a displacement of ~~said~~ the reflecting surface can be calculated from a static capacitance between ~~said~~ the upper electrode and ~~said~~ the capacitance detecting electrode, and

wherein the control electrode comprises a plurality of electrode elements, to which different voltages are applied individually.

2. (*Currently Amended*) A deformable mirror having a displacement detecting function according to claim 1, wherein ~~said~~ the control electrode-is also used as ~~said~~ the capacitance detecting electrode.

3. (*Currently Amended*) A deformable mirror having a displacement detecting function according to claim 1, wherein ~~said~~ the control electrode and ~~said~~ the capacitance detecting electrode are configured separately as in an identical layer.

4. (*Currently Amended*) A deformable mirror having a displacement detecting function according to claim 1, wherein ~~said~~ the control electrode and ~~said~~ the capacitance detecting electrode are configured separately as in different layers.

5. (*Currently Amended*) A deformable mirror having a displacement detecting function according to any one of claims 1-4, wherein a high-frequency voltage for

detecting ~~said~~ the static capacitance having a frequency much higher than a mechanical resonant frequency of ~~said~~ the reflecting surface is superposed on a voltage of a constant-voltage source for deforming ~~said~~ the reflecting surface, and a resistance is connected to a grounding side of ~~said~~ the upper electrode to detect an amount of displacement of ~~said~~ the reflecting surface from a phase and amplitude of an electric current flowing through ~~said~~ the resistance.

6. (*Currently Amended*) A deformable mirror having a displacement detecting function according to any one of claims 1, 3 or 4, wherein a high-frequency voltage of a frequency much higher than a mechanical resonant frequency of ~~said~~ the reflecting surface is applied to ~~said~~ the capacitance detecting electrode, and a resistance is connected to a grounding side of ~~said~~ the upper electrode to detect an amount of displacement of ~~said~~ the reflecting surface from a phase and amplitude of an electric current flowing through ~~said~~ the resistance.

7. (*Currently Amended*) A deformable mirror having a displacement detecting function, comprising:

a flexible thin film having a reflecting surface and an upper electrode to be deformed; and

a control electrode and a capacitance detecting electrode, located opposite to ~~said~~ the flexible thin film,

wherein a displacement of ~~said~~ the reflecting surface can be calculated from a static capacitance between ~~said~~ the upper electrode and ~~said~~ the capacitance detecting electrode, and

wherein the control electrode comprises a plurality of electrode elements, to which different voltages are applicable individually.

8. (*Currently Amended*) A deformable mirror having a displacement detecting function according to claim 7, wherein ~~said~~ the control electrode is also used as ~~said~~ the capacitance detecting electrode.

9. (*Currently Amended*) A deformable mirror having a displacement detecting function according to claim 7, wherein ~~said~~ the control electrode and ~~said~~ the capacitance detecting electrode are configured separately as in an identical layer.

10. (*Currently Amended*) A deformable mirror having a displacement detecting function according to claim 7, wherein ~~said~~ the control electrode and ~~said~~ the capacitance detecting electrode are configured separately as in different layers.

11. (*Currently Amended*) A deformable mirror having a displacement detecting function according to any one of claims 7-10, wherein a high-frequency voltage for detecting ~~said~~ the static capacitance having a frequency much higher than a mechanical resonant frequency of ~~said~~ the reflecting surface is superposed on a voltage of a constant-voltage source for deforming ~~said~~ the reflecting surface, and a resistance is connected to a grounding side of ~~said~~ the upper electrode to detect an amount of displacement of ~~said~~ the reflecting surface from a phase and amplitude of an electric current flowing through ~~said~~ the resistance.

12. (*Currently Amended*) A deformable mirror having a displacement detecting function according to any one of claims 7, 9 or 10, wherein a high-frequency voltage of a frequency much higher than a mechanical resonant frequency of ~~said~~ the reflecting surface is applied to ~~said~~ the capacitance detecting electrode, and a resistance is connected to a grounding side of ~~said~~ the upper electrode to detect an amount of displacement of ~~said~~ the reflecting surface from a phase and amplitude of an electric current flowing through ~~said~~ the resistance.

13. - 17. (*Cancelled*).

18. (*New*) A deformable mirror having a displacement detecting function, comprising:

a flexible thin film having a reflecting surface and an upper electrode to be deformed by electrostatic attraction; and

a control electrode and a capacitance detecting electrode, located opposite to the flexible thin film,

wherein a displacement of the reflecting surface can be calculated from a static capacitance between the upper electrode and the capacitance detecting electrode, and

wherein a high-frequency voltage for detecting the static capacitance having a frequency much higher than a mechanical resonant frequency of the reflecting surface is superposed on a voltage of a constant-voltage source for deforming the reflecting surface, and a resistance is connected to a grounding side of the upper electrode to detect an amount of displacement of the reflecting surface from a phase and amplitude of an electric current flowing through the resistance.

19. (*New*) A deformable mirror having a displacement detecting function according to claim 18, wherein the control electrode is also used as the capacitance detecting electrode.

20. (*New*) A deformable mirror having a displacement detecting function according to claim 18, wherein the control electrode and the capacitance detecting electrode are configured separately in an identical layer.

21. (*New*) A deformable mirror having a displacement detecting function according to claim 18, wherein the control electrode and the capacitance detecting electrode are configured separately in different layers.

22. (*New*) A deformable mirror having a displacement detecting function, comprising:

a flexible thin film having a reflecting surface and an upper electrode to be deformed by electrostatic attraction; and

a control electrode and a capacitance detecting electrode, located opposite to the flexible thin film,

wherein a displacement of the reflecting surface can be calculated from a static capacitance between the upper electrode and the capacitance detecting electrode, and

wherein a high-frequency voltage of a frequency much higher than a mechanical resonant frequency of the reflecting surface is applied to the capacitance detecting electrode, and a resistance is connected to a grounding side of the upper electrode to detect an amount of displacement of the reflecting surface from a phase and amplitude of an electric current flowing through the resistance.

23. (*New*) A deformable mirror having a displacement detecting function according to claim 22, wherein the control electrode and the capacitance detecting electrode are configured separately in an identical layer.

24. (*New*) A deformable mirror having a displacement detecting function according to claim 22, wherein the control electrode and the capacitance detecting electrode are configured separately in different layers.

25. (*New*) A deformable mirror having a displacement detecting function, comprising:

a flexible thin film having a reflecting surface and an upper electrode to be deformed; and

a control electrode and a capacitance detecting electrode, located opposite to the flexible thin film,

wherein a displacement of the reflecting surface can be calculated from a static capacitance between the upper electrode and the capacitance detecting electrode, and

wherein a high-frequency voltage for detecting the static capacitance having a frequency much higher than a mechanical resonant frequency of the reflecting surface is superposed on a voltage of a constant-voltage source for deforming the reflecting surface, and a resistance is connected to a grounding side of the upper electrode to detect an amount of displacement of the reflecting surface from a phase and amplitude of an electric current flowing through the resistance.

26. (New) A deformable mirror having a displacement detecting function according to claim 25, wherein the control electrode is also used as the capacitance detecting electrode.

27. (New) A deformable mirror having a displacement detecting function according to claim 25, wherein the control electrode and the capacitance detecting electrode are configured separately in an identical layer.

28. (New) A deformable mirror having a displacement detecting function according to claim 25, wherein the control electrode and the capacitance detecting electrode are configured separately in different layers.

29. (New) A deformable mirror having a displacement detecting function, comprising:

a flexible thin film having a reflecting surface and an upper electrode to be deformed; and

a control electrode and a capacitance detecting electrode, located opposite to the flexible thin film,

wherein a displacement of the reflecting surface can be calculated from a static capacitance between the upper electrode and the capacitance detecting electrode, and

wherein a high-frequency voltage of a frequency much higher than a mechanical resonant frequency of the reflecting surface is applied to the capacitance detecting electrode, and a resistance is connected to a grounding side of the upper electrode to detect an amount of displacement of the reflecting surface from a phase and amplitude of an electric current flowing through the resistance.

30. (New) A deformable mirror having a displacement detecting function according to claim 29, wherein the control electrode and the capacitance detecting electrode are configured separately in an identical layer.

31. (*New*) A deformable mirror having a displacement detecting function according to claim 29, wherein the control electrode and the capacitance detecting electrode are configured separately in different layers.